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10/500,317	06/28/2004	Shinichi Kawasaki	12088/019001	9863

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EXAMINER	
ZERVIGON, RUDY	
ART UNIT	PAPER NUMBER
1792	

NOTIFICATION DATE	DELIVERY MODE
10/21/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/500,317	KAWASAKI ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *60-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *60-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 November 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/24/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 60-66, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denes, Ferencz S. et al. (US 20030129107 A1) in view of Watabe; Masahiro (US 5500256 A). Denes teaches a plasma (100; Figure 1,2; [0025]-[0026]) surface processing apparatus (Figure 2; [0025]-[0026]) for processing a surface of a material to be processed (200; Figure 2; [0025]-[0026]) with a processing gas plasmatized (100; Figure 1,2; [0025]-[0026]) under an electric field, said apparatus (Figure 2; [0025]-[0026]) having an electrode structure (Figure 4; [0041]) having a gas passage (142; Figure 1; 408; Figure 4; [0041]) through which said processing gas is passed along a passage direction (142; Figure 1; 408; Figure 4; [0041]) and for generating said electric field in said gas passage (142; Figure 1; 408; Figure 4; [0041]), said electrode structure (Figure 4; [0041]) comprising:

> an elongate metallic first electrode body (406; Figure 4; [0041]) extending in a longitudinal direction (width of 140/146/402/406; Figure 1,4) orthogonal to said passage direction (142; Figure 1; 408; Figure 4; [0041]) and having an elongate outer first surface (416/406 interface; Figure 4; [0041]) extending in said longitudinal direction (width of 140/146/402/406; Figure 1,4); an elongate metallic second electrode body (402; Figure 4; [0041]) extending in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and arranged in parallel with said first electrode body (406; Figure 4; [0041]) in an arranging direction (axis along 116; Figure 1) orthogonal to said longitudinal direction

(width of 140/146/402/406; Figure 1,4) and to said gas passage direction (142; Figure 1; 408; Figure 4; [0041]), said second electrode body (402; Figure 4; [0041]) having an elongate outer second surface (outer surfaces 402; Figure 4; [0041]) extending in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and facing said first surface (416/406 interface; Figure 4; [0041]) in said arranging direction (axis along 116; Figure 1), said electric field being generated between said first (outer surfaces of 406; Figure 4; [0041]) and second surfaces (outer surfaces of 402; Figure 4; [0041]); and an elongate dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) extending in said longitudinal direction (width of 140/146/402/406; Figure 1,4) in parallel with said first (402; Figure 4) and second (406; Figure 4; [0041]) electrode bodies, said dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) being formed a cross section (Figure 4) orthogonal to said longitudinal direction (width of 140/146/402/406; Figure 1,4) into a U-shape (compare Applicant's 57a; Figure 19 to U-shaped 416 into page - Figure 1 U shape) so that said first case body (416; Figure 4; [0041]) has a first opening (142; Figure 1; 408; Figure 4; [0041]) which is opened toward one side direction (142; Figure 1; 408; Figure 4; [0041]) orthogonal to said longitudinal direction (width of 140/146/402/406; Figure 1,4), said first electrode body (406; Figure 4; [0041]) being received in said dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) so that said first surface (416/406 interface; Figure 4; [0041]) is contacted with an inner peripheral surface of said first case body (416; Figure 4; [0041]), said second electrode body (402; Figure 4; [0041]) being disposed

outside of said dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) in said arranging direction (axis along 116; Figure 1) said first opening (142; Figure 1; 408; Figure 4; [0041]) facing away from said second electrode body (402; Figure 4; [0041]), a space (width 408 x 2 Figure 4) extending in a longitudinal direction (width of 140/146/402/406; Figure 1,4) being formed between said dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) and said second electrode body (402; Figure 4; [0041]), said space (width 408 x 2 Figure 4) allowing said processing gas to pass along said passage direction (142; Figure 1; 408; Figure 4; [0041]) in said space (width 408 x 2 Figure 4), said processing gas being plasmatized in said space (width 408 x 2 Figure 4), said space (width 408 x 2 Figure 4) being provided as said gas passage (142; Figure 1; 408; Figure 4; [0041]) - claim 60

Denes further teaches:

An electrode structure (Figure 4; [0041]) according to claim 60, further comprising: a elongate lid (418; Figure 4; [0041]) made of a solid dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) material, extending in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and for closing said first opening (142; Figure 1; 408; Figure 4; [0041]), a lateral end part of said elongate lid (418; Figure 4; [0041]) covering an end surface of said protruded end part (114; Figure 1) in said opening (142; Figure 1; 408; Figure 4; [0041]) location more forward in a direction from said first electrode body (406; Figure 4; [0041]), as claimed by claim 61

Denes further teaches:

i. An electrode structure (Figure 4; [0041]) according to claim 62, wherein said first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) and said second dielectric case body (422; Figure 4; [0041]; "insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) are separately formed, as claimed by claim 63

ii. An electrode structure (Figure 4; [0041]) according to claim 62, wherein flow passage (408; Figure 4; [0041]) sectional area of said gas passage (408; Figure 4; [0041]) varies (at 422) along said gas passage direction , as claimed by claim 66 – horizontal 142 is shown as a smaller area than vertical 142.

iii. An electrode structure (Figure 4; [0041]) according to claim 62, wherein said first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) is provided with a gas uniformizing passage (408; Figure 4; [0041]) for dispersing said processing gas uniformly in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and for introducing said processing gas into said gas passage (408; Figure 4; [0041]), as claimed by claim 69

Denes does not teach:

i. an electric field applied from an electric power source – claim 60

ii. one of said first (406; Figure 4; [0041]) and said second (402; Figure 4; [0041]) electrode bodies being connected with said electric power source, the other of said first and second electrode bodies being electrically grounded - claim 60

iii. an end part on a side of said first opening (142; Figure 1; 408; Figure 4; [0041]) of said first case body (416; Figure 4; [0041]) being protruded in said one side direction (142;

Figure 1; 408; Figure 4; [0041]) relative to said first electrode body (406; Figure 4; [0041]) – claim 60

iv. An electrode structure (Figure 4; [0041]) according to claim 60, wherein said electrode structure (Figure 4; [0041]) further comprises an elongate dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) *second case body* extending in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and arranged in parallel with said first case body (416; Figure 4; [0041]) in said arranging direction (axis along 116; Figure 1), said second case body being formed a cross section orthogonal to said longitudinal direction (width of 140/146/402/406; Figure 1,4) into a U-shape (compare Applicant's 57a; Figure 19 to U-shaped 416 into page - Figure 1 U shape) so that said second case body has a second opening which is opened toward an opposite side of said one side direction, said gas passage being defined between said first and second case bodies, said second electrode body being, received in said second case body so that said second surface is contacted with an inner peripheral surface of said second case body, an end part on a side of said second opening of said second case body being protruded in said opposite side of said one side direction relative to said second electrode body, as claimed by claim 62

v. An electrode structure (Figure 4; [0041]) according to claim 63, wherein said first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) has an opposing surface abutted with said second dielectric case body (422; Figure 4; [0041]; "insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]),

and said opposing surface is provided with a recess to serve as said gas passage (408; Figure 4; [0041]), as claimed by claim 64

vi. An electrode structure (Figure 4; [0041]) according to claim 62, wherein said first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) and said second dielectric case body (422; Figure 4; [0041]; "insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) are integrally connected to one another, as claimed by claim 65

Watabe teaches an electrode plasma apparatus (Figure 3) including unmixed gas injection plenums (1x-3x; Figure 4A,B; column 5; lines 18-44; column 1; lines 65-67) and electric field applied from electric power sources (40-42, Figure 3) and grounded electrodes (14; Figure 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to reproduce and/or make separable Denes's electrode structure (Figure 4; [0041]), inclusive, to power or ground Denes's electrodes (416; Figure 4; [0041]) as taught by Watabe and optimize apparatus shapes/dimensions.

Motivation to reproduce and/or make separable Denes's electrode structure (Figure 4; [0041]), inclusive, to power or ground Denes's electrodes (416; Figure 4; [0041]) as taught by Watabe is for introducing unmixed and unreacted gases into processing as taught by Watabe (column 2; lines 61-67) and for providing power/functionality for Denes's electrodes (416; Figure 4; [0041]). Further, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04). Further, it is established that the use of a one piece construction instead of interconnected components is obvious (In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965), MPEP 2144.04).

Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

3. Claims 67 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denes, Ferencz S. et al. (US 20030129107 A1) and Watabe; Masahiro (US 5500256 A) in view of Anders; Andre et al. (US 6137231 A). Denes and Watabe are discussed above. Denes and Watabe do not teach:

i. An electrode structure (Figure 4; [0041]) according to claim 62, wherein Dene's first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) has a plate (416; Figure 3) defining said gas passage (408; Figure 4; [0041]), and a thickness of said plate varies along said gas passage direction (408; Figure 4; [0041]), as claimed by claim 67

ii. An electrode structure (Figure 4; [0041]) according to claim 62, wherein a distance between said first electrode body (406; Figure 4; [0041]) and said second electrode body (any other 140; Figure 1,3; [0033]) varies along said gas passage direction of gas flow in said gas passage direction (408; Figure 4; [0041]), as claimed by claim 68

Anders teaches a similar plasma source array (Figure 9). Specifically, Anders teaches a thickness of said plate/electrode (164/162; Figure 9) varies along a direction of gas flow in said gas passage (from 160 to outside of the structure; Figure 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to dimension Denes's plate/electrode such that a thickness/distance varies along a direction of gas flow in said gas passage.

Motivation to dimension Denes's plate/electrode such that a thickness/distance varies along a direction of gas flow in said gas passage is for forming high quality films resulting from a "constriction" (column 4, lines 54-67; column 3, lines 1-13).

Response to Arguments

4. Applicant's arguments filed August 4, 2008 have been fully considered but they are not persuasive.

5. The Examiner withdraws rejections under 112 as resulting from Applicant's claim amendments.

6. Applicant states:

“

However, Fig. 4 clearly shows that first electrode member 402 is elongate in the vertical direction, not the horizontal direction. In fact, the horizontal width of the first electrode 402, which is the diameter of the cylindrical first electrode 402, is the smallest dimension thereof. Thus, in Fig. 4, the vertical direction must necessarily be considered equivalent to the longitudinal direction of claim 60.

“

And..

“

However, as shown in Figs. 1 and 4, the second electrode member 406 is not elongate in the longitudinal direction (vertical direction of Fig. 4). In fact, the second electrode member 406 of Denes has its smallest dimension in this longitudinal direction. Thus, because claim 60 requires that the first electrode body, the second electrode body, and the dielectric first case body must be elongate and extend in the same direction, Denes fails to show or suggest at least the above limitations of claim 60.

“

In response, the Examiner believes that Applicant’s position merely amounts to a reorientation of the prior art’s apparatus. Indeed, if such an argument is sustainable then Denes’ apparatus would infringe Applicant’s apparatus (as stated in the Examiner’s rejections) in one orientation and would be patentable subject matter in another orientation. Further, that a claimed feature is “elongate” in *any* direction is in the Examiner’s opinion simply a statement that that feature has a

length in that given direction. For example, an article that is elongate in *any* direction away from a plane contained by the article is defacto three dimensional.

Applicant states:

“

Although the Examiner asserts in the Office Action that the insulating layer 416 of Denes is U-shaped, in the telephone interview of July 22, 2008, the Examiner agreed that the insulating layer 416 is pipe-shaped, and not U-shaped, as required by the claims. The Examiner agreed to reconsider the limitation in view of our telephone interview. Applicant notes there is no element in Denes that is U-shaped in a cross-section orthogonal to the longitudinal direction.

“

In response, the Examiner has reconsidered his Application of Denes and belives the cited first case body (416; Figure 4; [0041]) being formed of a cross section (Figure 4) orthogonal to said longitudinal direction (width of 140/146/402/406; Figure 1,4) into a U-shape (compare Applicant’s 57a; Figure 19 to U-shaped 416 into page - Figure 1 U shape). Indeed, the Examiner believes some clarification is needed in interpreting this claim requirement. As the Examiner stated in the July 22, 2008 interview, he believes that longitudinal direction claimed is equivalent to a direction into and out of the page in Figure 1. As such a cross section *orthogonal* to this longitudinal direction is a cross section parallel to the plane of the paper in Figure 1 itself. Such a cross-section is shown in Figures 3 and 4 and is thus the claimed “U-shape”.

Applicant states:

“

However, as shown in Fig. 4 of Denes, the only surface of second electrode member 406 in contact with the insulating layer 416 is the inner surface, and not the outer surface, of the first electrode body. Thus, Denes fails to show or suggest at least "said first electrode body being received in said dielectric first case body so that said first surface is contacted with an inner peripheral surface of said first case body," as required by the claims.

"

7. In response, the Examiner has reconsidered his grounds and believes Denes indeed teaches that Denes' "first electrode body (406; Figure 4; [0041]) being received in said dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) so that said first surface (416/406 interface; Figure 4; [0041]) is contacted with an inner peripheral surface of said first case body (416; Figure 4; [0041])", thus Applicant's initial argument that the only surface of second electrode member 406 in contact with the insulating layer 416 is the inner surface, and not the outer surface, of the first electrode body is not comensurate with the scope of the claims. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the only surface of second electrode member 406 in contact with the insulating layer 416 is the inner surface, and not the outer surface, of the first electrode body.) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant states:

“

In lines 16-19 on page 6 of the Office Action, the Examiner admits that Denes fails to teach the limitation "an end part on a side of said first opening of said first case body being protruded in said one side direction relative to said first electrode body" of claim 60. The Office Action is silent regarding how Watabe supplies this limitation which Denes lacks. Thus, a prima facie case of obviousness has not been established for claim 60.

“

In response, the Examiner addresses this claim limitation at the final portion of the 103 analysis – “It would … to reproduce and/or make separable Denes’s electrode structure (Figure 4; [0041]), inclusive, to power or ground Denes’s electrodes (416; Figure 4; [0041]) as taught by Watabe *and optimize apparatus shapes/dimensions*.

”

Conclusion

8. Applicant's amendment necessitated the new ground of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Friday schedule from 9am through 5pm. The official fax phone number for the 1792 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435

/Rudy Zervigon/

Primary Examiner, Art Unit 1792